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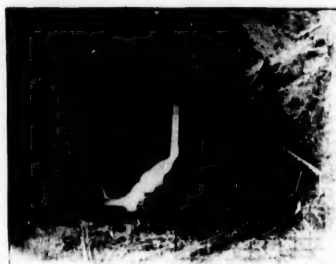
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THE HISTORY AND PROGRESS OF MINING IN BRITISH COLUMBIA.

By H. Mortimer Lamb.



THE first authenticated discovery of gold in British Columbia, according to Dr. G. M. Dawson, occurred at Mitchell or Gold Harbour, on the West Coast of Queen Charlotte Island, in 1851, a nugget weighing several ounces having been accidentally picked up by an Indian woman on the sea-

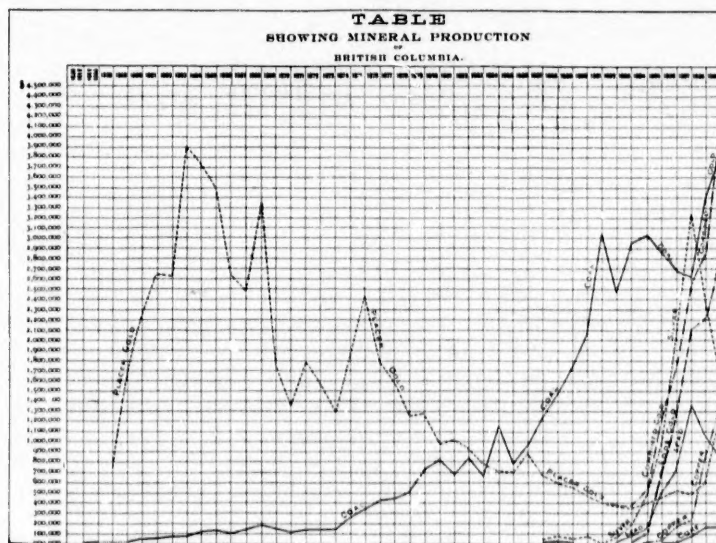
shore. This nugget was brought to Fort Simpson, and coming into the possession of the officer in charge of the Hudson Bay Company's post at that place, was forwarded by him to the company's headquarters at Victoria. An expedition was at once fitted out and, proceeding to the spot, succeeded in locating a quartz vein 7 inches wide, "reported to contain 25 per cent. gold in some places."* The find was worked for some months and then abandoned, the narrow vein entirely giving out; no other indications of mineral were ever found on the island, notwithstanding that this extraordinary little seam of quartz had yielded, in the few weeks it was worked, a value of \$20,000 on the word of one authority, or \$75,000 on that of another. About the same time coal, which had been discovered on Vancouver Island as far back as 1835, began to be mined in earnest at Nanaimo.

But the Fraser River excitement of 1858 may be fairly described as the genesis of the mining industry in British Columbia. In the April of that year the first shipload† of 540 miners left San Francisco for the new El Dorado, and by the following June, it is estimated, over 14,000 persons had embarked from that port. But while this was the inauguration of gold mining in British Columbia, the actual returns of \$543,000 for the season of 1858, from June to October inclusive, were considered disappointing, and so great were the natural difficulties of the country—unprovided, too, as it was then with means to support a large population—that a greater number of the immigrants returned to California

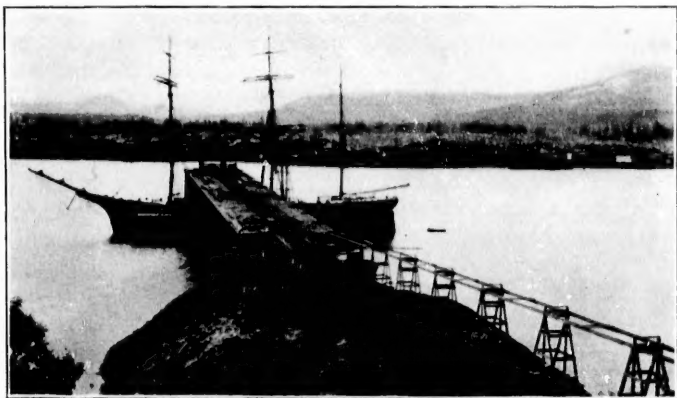
* Mineral Wealth of British Columbia; Geol. Survey Canada, 1888.

† Bancroft's History of British Columbia.

early in the following year. In 1859-60 good diggings were discovered at Fountain, above Lilloett, on the Fraser River, on the Thompson River, the Similkameen River in the southern portion of the Province, at the forks of the Quesnelle River and at Antler Creek in the Cariboo district. But it was not until 1861 that the two most noteworthy discoveries of Williams and Lightning Creeks in the Cariboo district occurred and created a second considerable migration of miners to western Canada, which increased in volume until 1864. The average value of gold obtained per lineal foot of channel of certain claims on Williams Creek is given in the report of the provincial minister of mines

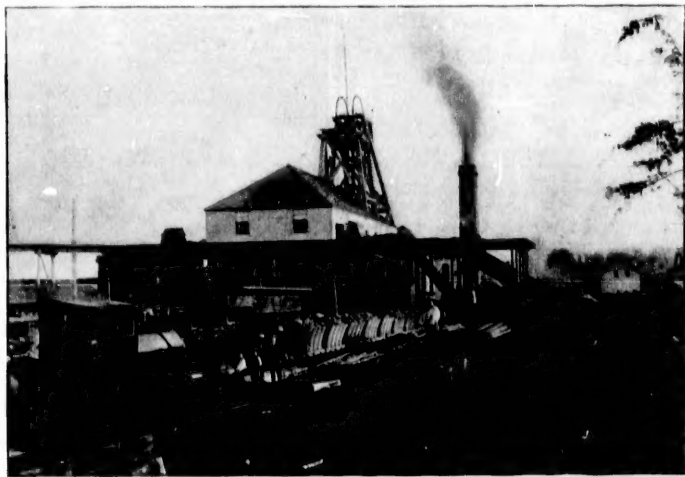


for 1875 as \$1,075. The production of Lightning Creek, while less in the aggregate than Williams, was greater while it lasted, and from this creek alone gold to the value of \$2,179,272 was extracted. As will be seen from the accompanying chart, the maximum production of placer gold was reached in 1863, when the output, almost entirely from the Cariboo district and from Wild Horse Creek in South East Kootenay, was \$3,913,563, and the average annual earnings per man, \$889. Until 1867 the production gradually but steadily decreased, although previous to that year fresh discoveries of alluvial gold were made at Leech River, on Vancouver Island, and at the bend of the Columbia River, in north Kootenay. The increased production in 1868-69 and in 1874-75-



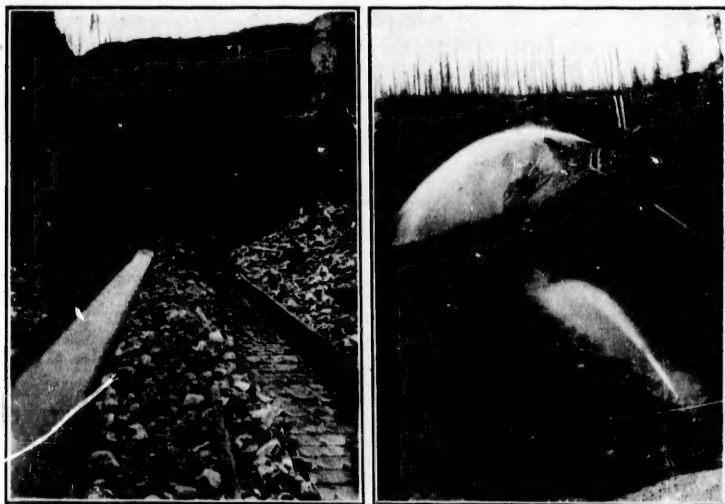
COAL SHIPMENT WHARF AT PROTECTION ISLAND, NANAIMO, B. C.

76 is doubtless due to respectively the discoveries in the Omineca district, near latitude 56, and in Cassiar, still farther north. From this latter district gold to the value of \$1,000,000 was taken out in 1874, this being more than 50 per cent. of the total production of the country for that year. In 1888 the value of the production of placer gold had fallen to not much above half a million dollars. Whereas in 1875 the number of miners employed was 2,024 and the annual average earnings per man \$1,222, in 1888 the average individual earning was but



NO. 1 SHAFT, NEW VANCOUVER COAL CO., NANAIMO, B. C.

\$307 for 2,007 men employed. The early miners worked the bars, the outcrops of the coarser wash in the terraces, and the creek and bench deposits, with no other appliances than picks and shovels, rockers and sluices. In the deeper ground in the Cariboo district sinking and drifting was resorted to, but here, too, only apparatus of the crudest, hand-manufactured type was in use. Early in the 70's, hydraulicking was attempted with cotton hose and with perhaps a 2-inch nozzle and rarely more than a hundred feet of pressure. Within the last six or seven years, however, the old—and, so far as the individual miner is concerned, worked-out—diggings of Cariboo, Omenica and Cassiar have become re-vitalised. In these districts some very important enterprises, involving large capital expenditures, are being conducted under the supervision of highly trained and skilled engineers. As yet in no instance has the success in these several undertakings been quite reached, although several are within a measurable distance of that consummation. Some of the Cariboo hydraulic schemes, in particular, by their magnitude are worthy of special mention. One of these was an



A CANAL AND SLUICE, AND HYDRAULIC MINING IN THE CARIBOO DISTRICT.

undertaking which was carried out at a cost of \$250,000, to dam back the waters of the Quesnelle Lake at its foot, and where the South Fork of the Quesnelle River, as it leaves, is a little more than 400 feet wide. In the past a great quantity of gold had been won from the bars and bottom of this river; but it was thought that owing to the rapid flow of

the stream (which runs 12,000 cubic feet per second in low water and 24,000 cubic feet in high water, in a succession of rapids between canyon-like gorges), the gold could not have been recovered from the main channel with the primitive methods employed at the earlier period, and consequently that by erecting a barrier at the outlet of the



THE DAM AT THE OUTLET OF QUESNELLE LAKE.

lake this channel could be laid bare and the gold recovered during the season of low water in the early spring and autumn months. The conception was sufficiently bold and even plausible, but since the dam was completed the result of preliminary work in gold getting has hardly as yet justified the high expectations of the originators of the project.

Another big enterprise, comparing favourably with any of a like nature in the world, comprises the mining by hydraulic process of a property in the same neighbourhood, aggregating 2,554 acres, and covering for a distance of about ten miles the auriferous deposits of a system of ancient rivers. These deposits vary from 400 to 600 feet in depth from surface to bottom of channel, and it is estimated contain 500,000,000 cubic yards of high-grade auriferous gravel available for future washing, the average gold tenure being modestly computed at 20 cents per cubic yard, and the total gold content at \$100,000,000. The equipment at this mine consists of a portable hydraulic plant of four lines of 30-inch and 22-inch riveted steel pipes, aggregating 6,000 feet; six No. 8 hydraulic giants with deflecting nozzles, varying from 6 to 10 inches in diameter; and the gold-saving appliances include a double extended system of sluices, 7 feet wide by 4 feet deep, aggregating 2,380 feet in

length. The sluices are paved partially with end-wood sluice blocks 1 foot thick, and partially with improved longitudinal steel riffles, while the installation is about to be made of two improved undercurrents intended for the recovery of flour quicksilver, fine gold, platinum, and osmiridium that cannot be saved in the ordinary sluice. A few figures relative to the operation of this property during the last three years may prove interesting:

Gravel Washed, Cubic Yards.	Duty per Miner's Inch. Cubic Yards.	Value per Cubic Yard (Cents.)
1897.		
413,058, mostly top gravel,	\$3.84	\$17.20
345,231, " " "	3.44	16.10
*81,817, " " "	5.12	6.90
1898.		
350,000, " " "	2.44	21.00
35,070, bottom gravel,	1.10	67.15
Operating Expenses.		Cents per Cubic Yard.
Labour.....		\$3.80
Explosives		2.40
Maintenance of Plant.....		2.58
Management and Office Expenses.....		1.05
Sundries.....		1.77
		<u>\$11.60</u>
Gravel Washed, Cubic Yards.	Average Value (Cents).	Cost (Cents).
1899.		
1,052,535, gravel, boulders, etc.,	\$27. ³ / ₁₀	\$6.54

* Mostly boulder clay.

It is only fair to add that these costs of operation will be still further reduced in the near future.

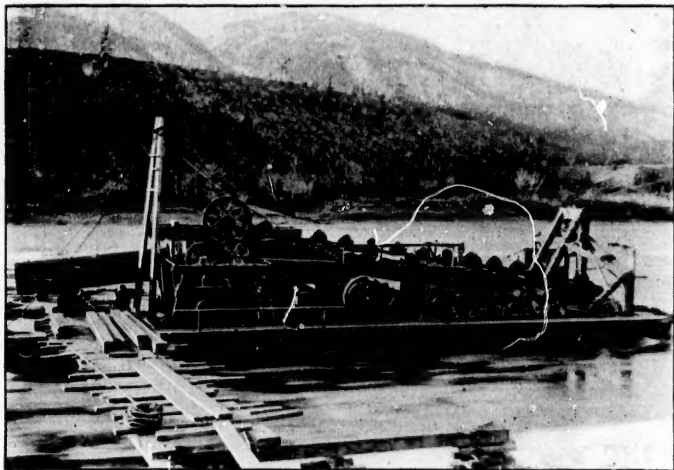
On another property an interesting mining problem under entirely different conditions has been developed in a gravel deposit five miles south of Quesnelle Lake. Here the bed of the channel has been found to dip at a very flat angle, and the entire gravel bank has become a hard cemented mass. An attempt was first made to work this out with monitors, but as the face advanced the gravel began to get harder, and as the amount of cement was increased the wall was broken down with enormous charges of powder; but hydraulicking was found to be unavailing in disintegrating the masses thus shattered, which were swept with most of the contained gold out to the dump. Milling tests of a favourable nature having been made in San Francisco, giving gold returns of \$4.85 and up to \$5.56, a tentative plant was erected consisting of two self-feeders, two batteries of five stamps of 850 lbs., drop 7 inches, 90 to 100 per minute. From the mill returns it has been shown

that with the ten-stamp battery 135 tons of cemented gravel can be crushed per twenty-four hours. The total cost of mining and milling has not exceeded \$1.40 per ton.



Although the opportunities for the remunerative investment of capital in alluvial mining in this district are good, some time must elapse before the field is thoroughly exploited, and while there is abundant evidence of quartz leads, values are too low to permit of profitable mining under existing conditions of labour and transport. In the early 60's the cost of transportation of supplies from the sea-board to the mines was a dollar per pound. The present rate is from six to seven cents, and thus the freight charges on mining machinery and supplies are still not infrequently greater than the first cost of the articles themselves.

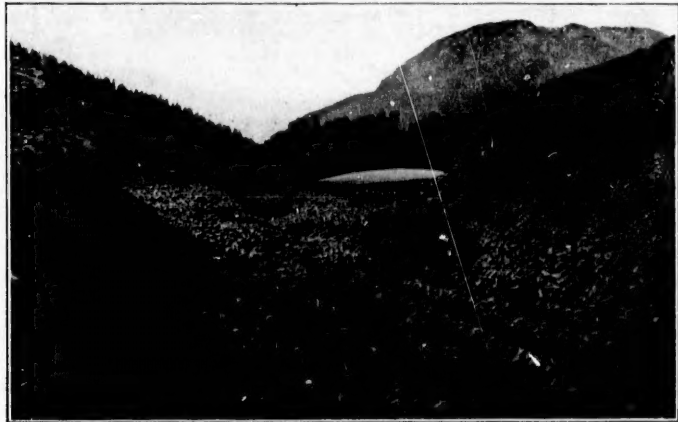
Some attempts have been made to dredge the bottoms and bars in the upper Fraser and Quesnelle rivers; but as these undertakings were often begun without due inquiry or investigation, and again because they were conducted by men lacking in experience, and the suction-



A DREDGE ON THE FRASER RIVER, IN COURSE OF CONSTRUCTION.

pump type of dredge generally used was unsuitable, very limited success has attended effort in this direction in the past. It remains to be seen whether better results will attend the use of dredges built after the New Zealand pattern, which have lately been introduced; but in the majority of the rivers and streams the velocity of the currents and the size of the boulders in the channels present serious difficulties.

The revival of placer gold mining in British Columbia, of which



VAN WINKLE BAR GOLD MINE, FRASER RIVER, NEAR LYTTON, B. C.



THE DISCOVERY CLAIM, PINE CREEK, ATLIN DISTRICT.

the evidence is the gradually increasing production, while ascribable in part to the adoption of modern gold-mining methods, is also due to the recent discovery in the extreme northern limits of the province, and east of the Pacific Coast mountain ranges, of alluvial gold deposits of very fair promise. From this district last year royalty was paid on 26,579.52 ounces of gold. The discovery of this field is quite recent and consequently only primitive processes of gold-mining have been as yet



MINING ON PINE CREEK IN THE ATLIN DISTRICT.

applied, but to deal with the conditions economically hydraulic methods—including in places the use of elevators—will have to be resorted to, when the best results may be anticipated. But placer mining, as compared with lode mining, takes, in the consideration of the British Columbia industry, quite a secondary place in point of importance, although the latter is of relatively recent origin and growth.



CHAIN PUMPS AT WORK ON PINE CREEK, IN THE ATLIN DISTRICT.

Seventy years ago the Hudson Bay Company discovered and worked a galena vein in the Ainsworth district of West Kootenay, converting the ore into bullets for trade with the Indians; but productive mining in the Kootenays and other quartz districts can not be said to have actually commenced prior to 1887. About that year prospectors, of which the neighbouring States to the south had bred a sturdy class, began, in spite of the incredible physical difficulties of an unexplored, mountainous, and heavily timbered country, to turn their attention to the territory adjacent to Kootenay Lake and the Columbia River, to East Kootenay and the interior plateau; but with the exception of the Hall group of mines near Nelson, no notable discoveries were made until the summer of 1890. In July of that year all the more important mines of the Rossland camp were located, including the Le Roi, War Eagle, and Centre Star, and the autumn of the following year witnessed the discovery of the extraordinarily rich silver-lead mines of the Slocan region. From this time onward prospecting was vigorously prosecuted throughout the southern and central portions of the province, the whole of which has been found to be more or less richly min-

eralised. In view of the fact that the first discoveries occurred but seven or eight years ago, it is hardly necessary to state that lode mining in British Columbia is yet in its infancy. Nevertheless the development and progress made in this short period of time is very strikingly evidenced in the following table* of production of lode mines:

YEAR.	GOLD.		SILVER.		LEAD.		COPPER.		TOTAL VALUES.
	Oz.	Value.	Oz.	Value.	Pounds.	Value.	Pounds.	Value.	
1887	.....	.....	17,690	\$17,331	204,800	\$0,216	.....	.....	\$26,547
1888	.....	.....	79,780	75,000	674,500	29,813	.....	.....	104,813
1889	.....	.....	53,192	47,873	165,100	6,498	.....	.....	54,371
1890	.....	.....	70,427	73,948	<i>Nil.</i>	<i>Nil.</i>	.....	.....	73,948
1891	.....	.....	4,500	4,000	<i>Nil.</i>	<i>Nil.</i>	.....	.....	4,000
1892	.....	.....	77,160	66,935	808,420	33,064	.....	.....	90,999
1893	1,176	\$23,404	227,000	195,000	2,135,023	78,906	.....	.....	297,400
1894	6,232	125,014	746,379	470,219	5,662,523	169,875	324,680	\$16,234	781,342
1895	39,264	785,271	1,406,522	977,229	16,477,464	332,235	652,840	47,642	2,344,397
1896	62,250	1,244,180	3,135,343	2,100,689	24,109,977	721,384	3,818,556	100,926	4,257,179
1897	106,141	2,122,820	5,472,971	3,272,836	38,841,135	1,390,517	5,325,180	266,258	7,059,431
1898	110,061	2,201,217	4,202,401	2,375,841	31,693,559	1,077,581	7,271,678	874,781	6,529,420
1899	138,315	2,857,573	2,930,413	1,663,708	21,862,436	878,870	7,722,591	1,351,453	6,751,004
	463,462	\$9,359,479	18,612,778	\$11,340,609	142,722,937	\$4,628,060	25,415,525	\$2,747,204	\$28,575,451

As will be noticed, silver and lead were the first minerals produced, and the circumstances may be largely explained on the ground of the exceptional richness of the galena ores of the country, and more especially of those of the Slocan district. Thanks to these high-grade qualities the original discoverers in many instances succeeded in working the properties with profit from the "grass-roots" without the assistance of capital. Thus, before railways were constructed through



KOOTENAY LAKE, BRITISH COLUMBIA.

this district, a relatively large quantity of ore was mined and "packed" out on horseback a distance of 17 miles through thick forest to a point on Kootenay Lake, at a cost of from \$40 to \$45 per ton. It was then forwarded by boat and rail to smelters in the United States at a further cost of \$20 a ton. Add to this the cost of mining and treatment,

* From advance sheets Minister of Mines' Report, 1900.

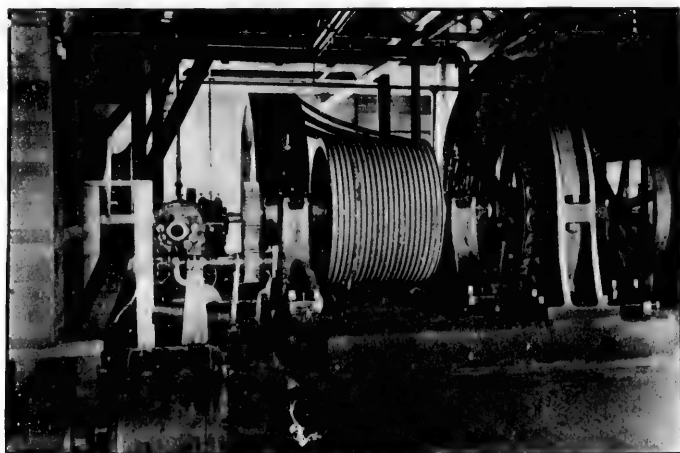
and it will be readily admitted that only remarkably high-grade ore could stand so heavy a tax and yet admit of profitable extraction. From facts at my disposal, I do not hesitate to assert that the average metallic percentages of some of the Slocan argentiferous ores cannot be bettered in any other part of the world.

With the completion in 1894-95 of railways, the construction of which was not unattended with engineering difficulties, having regard to the high altitudes and the mountainous character of the country generally—an era of active mining development on a much more extensive scale was inaugurated, each year thereafter, until 1898, showing an increase of output of considerably more than 100 per cent. The



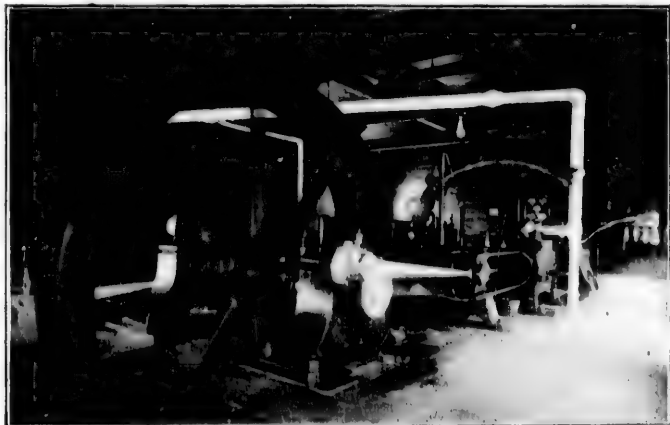
FACE OF TUNNEL, CLIFF MINE, ROSSLAND, B. C.
About 300 feet in.

maximum production was reached in 1897. The unusually low price of silver towards the close of that year and in the spring of 1898, together with the uncertainty as to the future price of the metal, and furthermore the increase of the duty on lead imported into the United States—our principal market—acted as a serious check to the young industry; and when, towards the close of the year, the price of silver again advanced, it had become too late for the resumption of shipments. Meanwhile at many of the larger producers advantage was taken of the opportunity to extend development operations and to block out ore-bodies. Hence the outlook for an exceptionally large production last year was peculiarly bright. These prospects would



AIR COMPRESSOR AT WAR EAGLE MINE, ROSSLAND.

certainly have been realised but for the unfortunate passage of an act by the provincial legislature limiting the day's work underground in metalliferous mines to 8 hours, under a penalty. While this legislation may not have been the direct cause of the friction which subsequently ensued between masters and men, it certainly precipitated matters, the result of which was the closing down of the majority of the Slocan mines from June to December. Previous to the passage of this act the miners in this district were paid \$3.50 for a working day



BLACK BEAR AIR COMPRESSOR, ROSSLAND CAMP.

of nominally 10 hours. The actual time, however, spent in the breast was rarely more than 9 hours. When the "8-hour law" came into force the miners, through their local unions, refused to accept a corresponding reduction of wage, giving as reasons for their refusal the contentions that (1) the average miner would do as much work in 8 hours as in 10; and (2)—which would seem to be a still less rational argument—"that the Slocan mines are so rich that the owners can afford to pay higher wages." Both sides remaining obdurate, the mines were closed until quite recently, when a compromise was at length effected, the owners offering and the men accepting a wage of \$3.25 for a working day of 8 hours.

It should be stated that there is no economic problem in Western Canada to-day representing greater difficulties of solution than that involved in the question of the general inefficiency and unproductiveness of labour in this country in relation to its cost. The mean standard of efficiency of miners in British Columbia is markedly lower than in any other mining territory in North America; yet the scale of wage is as high as, if not higher than, that in force in most parts of the United States. But it is upon that country that British Columbia is chiefly dependent for skilled mine labour, and as the inducements offered are not sufficiently great to induce to any considerable extent immigration of men who at home are certain of employment at a highly remunerative rate of wage, skilled American miners are in the minority and a large portion of the labour employed in the British Columbia mines is, therefore, made up of a heterogenous class com-



CONCENTRATOR IN THE AINSWORTH DISTRICT.



THE CANADIAN SMELTING WORKS, TRAIL, B. C.

posed of lumbermen, farm and railway hands and navvies, who nevertheless are as highly paid as their more experienced and qualified colleagues. Consequently when questions of dispute arise between capital and labour the men have the great advantage, of which both sides are aware, in that the expert miners can threaten to leave the country if a protracted settlement appears likely. In the recent Slocan labour troubles, the railways, it is affirmed, made good the losses sustained in the suspension of ore shipments by the transport of miners returning to the United States.

Another drawback to mining in the Slocan, although this condition may shortly be ameliorated, is the cost of marketing the ores. When the ore reaches the surface it is either sorted by hand or concentrated by machinery of the usual type. In the concentration there is often much loss of silver with the tailings, which is unavoidable; and so long as the silver-bearing minerals thrown off from the mill have a value less than the cost of freight and treatment, their rejection is explainable. But the silver thus deposited in the tailings may afterwards be recovered by other methods and yield a profit when shipped in a concentrated form, and when local smelting is established close dressing will become more necessary. After this preliminary dressing the ores are mainly consigned to Colorado for smelter treatment, the cost of carriage ranging from \$11 to \$19 per ton.

Although in the official reports the date of the commencement of copper production is given as 1864, as a matter of fact the first shipment of 100 tons of copper ore was made in 1888-9 from the Hall group of mines near Nelson, the value of the product being from 220.5

ounces silver and 17 per cent. copper to 574 ounces silver and 43.36 per cent. copper per ton. Also a shipment of 10 tons was made from Rossland in 1891 and of 700 tons in 1893. It is interesting, by-the-way, to note in connection with this first shipment from Rossland that the exceptionally high smelter returns of \$84 per ton, or 3 ounces silver, 5.21 per cent. copper, and about 4 ounces of gold, practically established that camp. The consignment, packed over 12 miles of rough trail to the Columbia River, was sent from the Le Roi mine by a small syndicate of Spokane, Washington, speculators to whom the property was under bond, and who subsequently made a very large fortune as a result of their investment. Until the spring of 1895, however, the progress of mining in this district was comparatively slow, and it is said that no less than forty-two "experts" had in the interim condemned the camp as worthless. But in 1895, on the strength of a contract from the Le Roi Company to supply 75,000 tons of ore (on half of which a fixed charge of \$11 a ton for freight and treatment was arranged), a land grant from the Provincial Government, and a bonus from the Dominion Government of \$1 on each ton of ore smelted, a smelter was erected on the Columbia River at Trail and a narrow-gauge railway built between the mine and the works. As the crow flies this distance is only 4 or 5 miles, but to overcome the difference in elevation of about 2,100 feet between Trail and Rossland, the switch-



NEW SMELTER IN THE BOUNDARY CREEK DISTRICT.

back arrangement was employed, thus lengthening the line to over 11 miles. After the erection of the smelter, the cost of freight and treatment for nearly two years remained unchanged at \$10 to \$14 per ton, 95 per cent. of the assay value of the gold and silver being paid for and a deduction made of 1.3 from the percentage of copper present.

With the completion of their contract with the Trail smelter, the owners of the Le Roi mine erected works of their own immediately across the boundary at Northport, Washington, and succeeded in reducing their smelter costs to some extent. But with the acquisition of the Trail smelter by the Canadian Pacific Railway Co. freight and treat-



CYANIDE WORKS AT THE DOROTHY MORETON MINE, WEST COAST OF MAINLAND, BRITISH COLUMBIA.

The only instance of the adoption of the cyanide treatment in British Columbia.

ment charges were immediately cut down to \$7 per ton. The chief cause of this reduction in costs was the great cheapening of fuel following the development of the Crow's Nest Pass coal fields. That the present treatment charges may still be considerably lowered is quite probable, for according to the report of the Le Roi Company last August, the cost of treatment at the Northport smelter was only \$3.

In connection with the reduction of freight and treatment charges, the following table giving the actual yield values, according to smelter returns, of Rossland ores for the years 1894 to 1897 inclusive, is interesting as showing the increase of tonnage and gradual decrease of values as it became possible to extract profitably lower grade ores:

Year.	Tons (2,000 lbs.).	Gold (Ounces).	Silver (Ounces).	Copper.	Value.
1894.....	1,856	2.00	2.80	2.85%	\$40.69
1895.....	19,693	1.60	2.41	2.10 "	35.67
1896.....	38,075	1.45	2.34	2.08 "	32.65
1897.....	68,804	1.42	1.60	1.32 "	30.48

In 1898 the average value per ton on a production of 111,282 tons was \$22.80; and in 1899, \$18 on a production of 185,000 tons. On this last there is still left a very fair margin of profit, and ore as low grade as \$7.50 was profitably mined last year. In the past two years the Rossland mines have been equipped with costly machinery of the most recent design, and with electric power-transmission, the work of the mines on the contract system, and other innovations, the outlook for the future is very bright. To show further the condition of mining in the Rossland district, I append an excerpt from a recent report



THE MOTHER LODE MINE, BOUNDARY CREEK DISTRICT.
The vein is more than 200 feet wide.

of the War Eagle Mining Company, comparing the cost of development and ore extraction from January, 1897, to December 31st, 1899:

Date.	Cost of Development per Ton of Ore Sold.	Cost of Ore Extraction per Ton of Ore Sold.	Total Cost of Mining.
January to September, 1897.....	\$10.67	\$2.11	\$12.78
October, 1897, to September, 1898.	4.32	2.98	7.30
October, 1898, to September, 1899.	1.71	3.58	5.29
October, 1899, to December, 1899.	1.80	3.42	5.42

Up to the present time almost the entire metalliferous production of British Columbia has been derived from the two districts of Slocan and Rossland, but in the near future the productive area will be vastly augmented as a result of the development which has of recent years taken place in East Kootenay and also in what is known as the "boundary country," forty miles west of Rossland and immediately north of the international boundary line. The latter district is of exceptional interest on account of the very extraordinary size of the deposits found there, some of which are considerably more than 100 and, in one or two cases, 200 feet wide. The characteristic ore—an iron sulphide carrying gold and copper—is, however, speaking generally, of low-grade value, not averaging over \$10 or \$12 per ton. Accu-



BOILER PLANT, MOTHER LODGE MINE, BOUNDARY CREEK DISTRICT.

These boilers were hauled in a distance of 65 miles on waggon.

rate sampling is a very difficult matter, as the ore will range from a barren pyrrhotite to another, of very similar appearance, carrying high gold values, while the copper contents in different parts of the same ore-body will vary proportionately as much. Where concentration is practicable it will undoubtedly be resorted to and some very interesting tests in this direction have

been made by a local engineer, who sends me the following particulars:

1. The magnetic oxides cannot be concentrated except by magnetic separators, followed by water concentration. With this plan concentration is very complete.
2. The calcite and siliceous ores can be concentrated, the first more completely than the second.
3. The proportion of gold saved in the concentrates will be close to, if not exceeding, 95 per cent. of all gold present in ore.
4. The proportion of copper saved will vary from 60 to 80 per cent., according to the degree in which formation of slimes can be obviated and the degree in which those formed can be concentrated.
5. The ratio of concentration will average about three tons into one.

Two large smelters are now in course of erection in the district, and it is stated that the charge for treatment will not exceed from \$3.50 to \$4 per ton, owing to the self-fluxing character of the ores; but even with this cheap rate, the utmost economy in working will need to be observed to ensure success. The completion last year of a railway



GALLOWS FRAME AND HOIST IN POSITION, MOTHER LODGE MINE.

into the district acted as a great spur to industry, and in the last few months all the more developed mines have been suitably equipped with machinery. Previous to the construction of this railway, machinery and supplies were hauled in, a distance of 65 miles, over a rough mountainous waggon road, at the almost prohibitive charge of 2 to 3 cents per pound. While the conditions now existing are eminently



KNOB HILL AND IRONSIDES MINES, IN THE BOUNDARY CREEK DISTRICT.

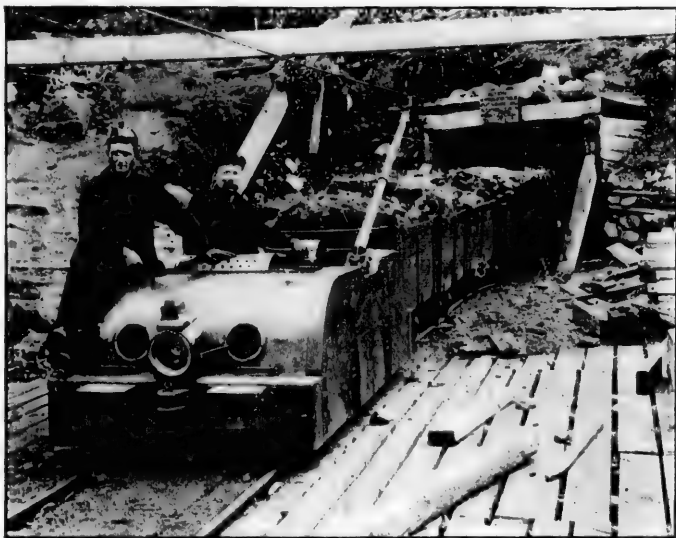
more favourable, the future of the Boundary Creek district now rests largely with the metallurgist. Next year, however, should witness a very considerable output of both copper and gold from this region, and particularly of the former metal.

In East Kootenay, with an exception in the case of two or three large producers of lead and silver, very little productive mining has taken place; but the effect of improved transportation facilities as afforded by recently constructed railways is here also becoming very apparent in greatly increased activity. Exceedingly promising "prospects" of copper, gold, silver and lead are now being developed in several localities included in this area, but by far the most important work in course of progress is the opening up of the vast coal areas of the Crow's Nest Pass—undoubtedly one of the largest coal properties known. The measures occur in the heart of the Rockies and extend north and south a distance of 40 miles, stretching east and west 10

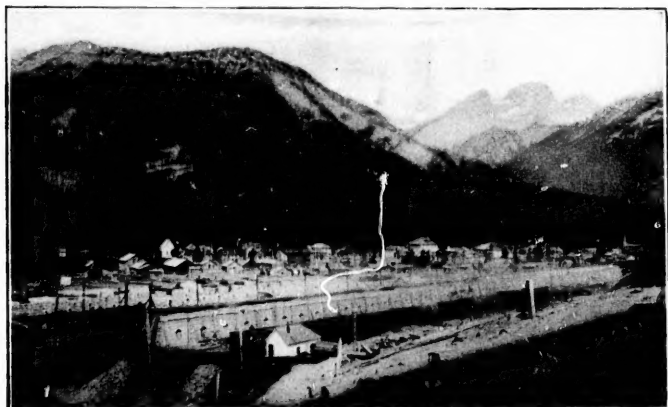


SLOCAN STAR MINE CONCENTRATOR SANDON B. C.

miles from the banks of Elk River towards the boundary line between Alberta and British Columbia. This area is, of course, reduced by the creeks which abound on the mountain slopes, and from which the coal measures have been eroded, but sufficient remains to constitute the coal fields unique in extent, as they are in richness. The geological report states that there are upwards of fifty workable seams of coal,

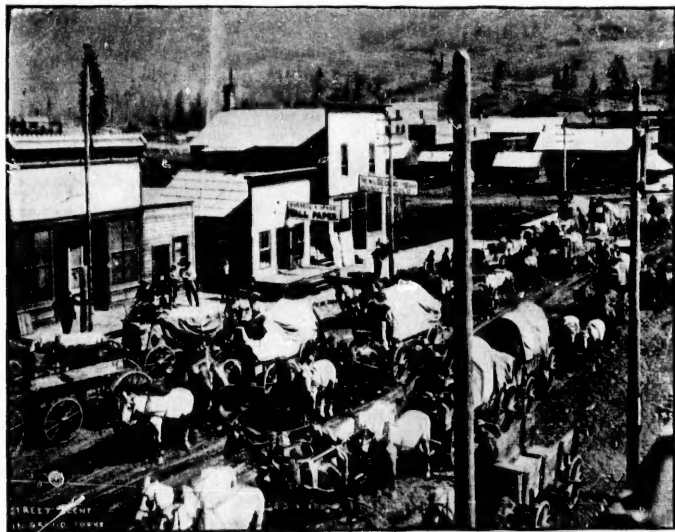


ELECTRIC LOCOMOTIVE COMING OUT OF A BRITISH COLUMBIA MINE.
The coal cars carry a load of 2 tons gross each.

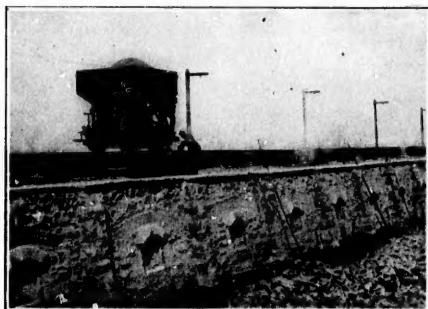


TOWN OF FERNIE, SHOWING COKE OVENS UNDER CONSTRUCTION AND COMPLETED

neighbourhood for power, the Crow's Nest Coal Company can produce "run of mine" coal for \$1.25 per ton and sell and deliver coke to the smelters at \$6, or less, per ton. At present the output is sufficient only to supply the local demand, but in a very short time the product of these collieries will find a ready market not only in the neighbour-



STREET SCENE IN GRAND FORKS, IN THE BOUNDARY CREEK DISTRICT.



ELECTRIC-DRIVEN 7-TON COAL LORRY, FOR CHARGING COKE OVENS AT FERNIE.

ing states, but Crow's Nest coal, it is understood, will also be purchased largely by the British Admiralty for use on the ships of the Royal Navy, so satisfactory have the tests proved.

There are other districts in addition to those to which I have made special reference, which, if they have not as yet contributed to the mineral production of British Columbia, promise ere long, on the strength of recent discoveries, to do so very appreciably. In short, there is no longer any question as to the exceedingly bright future in store for the mining industry of this country. Gradually the obstacles to progress which now appear so formidable will be overcome; the labour problem will present far fewer difficult points as the mining districts become more thickly populated and as the industry becomes more firmly established; mining and metallurgical costs will be still further reduced as conditions are more perfectly understood; and in proportion to the growth and importance the industry attains, so will be the readiness of capital, both British and American, to enlarge its scope in what must ultimately become one of the most important centres of mining activity in the whole of North America.



COKE OVENS OF THE CROW'S NEST PASS COLLIERIES, EAST KOOTENAY.

